

Amendment After Final Rejection
Application No. 10/576,192
Attorney Docket No. 062412

AMENDMENTS TO THE CLAIMS

Listing of claims:

This listing of claims replaces all prior versions and listings of claims in the application.

1. (Currently Amended): A roller screw comprising:

a screw shaft having an outer peripheral surface in which a spiral roller rolling groove is formed;

a nut member having an inner peripheral surface in which a spiral loaded roller rolling groove is formed so as to oppose to the roller rolling groove of the screw shaft;

a return member connecting one and another ends of a loaded roller rolling groove of the nut member and configured to circulate a roller rolling the loaded roller rolling passage between the roller rolling groove of the screw shaft and the loaded roller rolling groove of the nut member;

lubricant recesses formed at both end portions of a lubricant holding port of the spacer, the lubricant recesses each having a diameter larger than that of the lubricant holding port; and

a plurality of rollers disposed in the loaded roller rolling passage and the return member,

wherein a spacer is disposed between a pair of adjacent rollers so as to prevent the paired rollers from contacting each other, the spacer being formed with concave portions at both ends in an advancing direction thereof so as to contact an outer peripheral surface of the roller, and the roller contacts the concave portions along an entire length in the axial direction thereof, a pair of axes of the rollers being disposed in a pair of planes substantially parallel with each other in a state that the paired rollers disposed at both ends in the advancing direction contact the concave portions of the spacer, the

Amendment After Final Rejection
Application No. 10/576,192
Attorney Docket No. 062412

axes of the pair of adjacent rollers being perpendicular to each other when viewed from a roller advancing direction.

2 and 3. (Canceled)

4. (Currently Amended): A roller screw comprising:

a screw shaft having an outer peripheral surface in which a spiral roller rolling groove is formed;

a nut member having an inner peripheral surface in which a spiral loaded roller rolling groove is formed so as to oppose to the roller rolling groove of the screw shaft;

a return member connecting one and another ends of a loaded roller rolling groove of the nut member and configured to circulate a roller rolling the loaded roller rolling passage between the roller rolling groove of the screw shaft and the loaded roller rolling groove of the nut member;

lubricant recesses formed at both end portions of a lubricant holding port of the spacer, the lubricant recesses each having a diameter larger than that of the lubricant holding port; and

a plurality of rollers disposed in the loaded roller rolling passage and the return member, wherein a spacer is disposed between a pair of adjacent rollers so as to prevent the paired rollers from contacting each other, the spacer being formed with concave portions at both ends in an advancing direction thereof so as to contact an outer peripheral surface of the roller, and the roller contacts the concave portions along an entire length in the axial direction thereof, a pair of axes of the

Amendment After Final Rejection

Application No. 10/576,192

Attorney Docket No. 062412

rollers being disposed in a pair of planes substantially parallel with each other in a state that the paired rollers disposed at both ends in the advancing direction contact the concave portions of the spacer, wherein an intersecting portion of the concave portion of the spacer and a surrounding surface portion of the spacer except the concave portion is chamfered so as to perform a smooth circulation of the spacer.

5. (Previously Presented): The roller screw according to claim 1 or 4, wherein the return member includes a central portion extending linearly and a pair of end portions bent on both sides of the central portion, front end portions of the end portions are disposed in a tangential direction of the loaded roller rolling passage as viewed from the axial direction of the screw shaft and are inclined in a lead angle direction of the loaded roller rolling passage as viewed from a side of the screw shaft.

6. (Previously Presented): The roller screw according to claim 1 or 4, wherein a loaded roller rolling passage having a square section is formed between the roller rolling groove of the screw shaft and the loaded roller rolling groove of the nut member, and axes of a pair of adjacent rollers are perpendicular to each other as viewed from a roller advancing direction.

7. (Currently Amended): A roller screw comprising:

a screw shaft having an outer peripheral surface in which a spiral roller rolling groove is formed;

Amendment After Final Rejection
Application No. 10/576,192
Attorney Docket No. 062412

a nut member having an inner peripheral surface in which a spiral loaded roller rolling groove is formed so as to oppose to the roller rolling groove of the screw shaft;

a return member connecting one and another ends of a loaded roller rolling groove of the nut member and configured to circulate a roller rolling the loaded roller rolling passage between the roller rolling groove of the screw shaft and the loaded roller rolling groove of the nut member;

lubricant recesses formed at both end portions of a lubricant holding port of the spacer, the lubricant recesses each having a diameter larger than that of the lubricant holding port; and

a plurality of rollers disposed in the loaded roller rolling passage and the return member, wherein a spacer is disposed between a pair of adjacent rollers so as to prevent the paired rollers from contacting each other, wherein lubricant holding grooves are formed on the surface of the spacer.

8. (Currently Amended): A roller screw comprising:

a screw shaft having an outer peripheral surface in which a spiral roller rolling groove is formed;

a nut member having an inner peripheral surface in which a spiral loaded roller rolling groove is formed so as to oppose to the roller rolling groove of the screw shaft;

a return member connecting one and another ends of a loaded roller rolling groove of the nut member and configured to circulate a roller rolling the loaded roller rolling passage between the roller rolling groove of the screw shaft and the loaded roller rolling groove of the nut member;

Amendment After Final Rejection
Application No. 10/576,192
Attorney Docket No. 062412

lubricant recesses formed at both end portions of a lubricant holding port of the spacer, the
lubricant recesses each having a diameter larger than that of the lubricant holding port; and
a plurality of rollers disposed in the loaded roller rolling passage and the return member,
wherein a spacer is disposed between a pair of adjacent rollers so as to prevent the paired rollers from
contacting each other, wherein the return member includes a roller return passage at a central portion
thereof which is twisted.

9. (Canceled):

10. (Previously Presented): The roller screw according to claim 1, wherein a notch is formed
at a corner portion of the spacer.

11. (Canceled):

12. (Previously Presented): The roller screw according to claim 4, wherein a notch is
formed at a corner portion of the spacer.

13. (Canceled):

Amendment After Final Rejection
Application No. 10/576,192
Attorney Docket No. 062412

14. (Previously Presented): The roller screw according to claim 7, wherein a notch is formed at a corner portion of the spacer.

15. (Canceled):

16. (Previously Presented): The roller screw according to claim 8, wherein a notch is formed at a corner portion of the spacer.